SIEMENS

Simomed 90 N

RX

44 cm Monitor

Function Description

50/60 Hz	525/625 lines	X2079 X2092
100/120 Hz	525/625 lines	X2080

Register 7

RX52-060.041.01.01.02

English
03.95

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Overview

This function description refers to Simomed-N monitors **X2079, X2092** and **X2080**. The monitors X2079 und X2092 work with normal V-deflection frequencies. The monitor X2080 works with a V-deflection-frequency of 100Hz resp.120Hz to provide a flicker free image.

The Simomed-N monitors are equiped with the following boards:

VV **Video amplifier board**

AP **Deflection board**
V-deflection; H-deflection; grid voltages for picture tube; high voltage generation for picture tube.

SV **Power supply**
-16V; + 16V; -6.3V; + 29V; + 48V

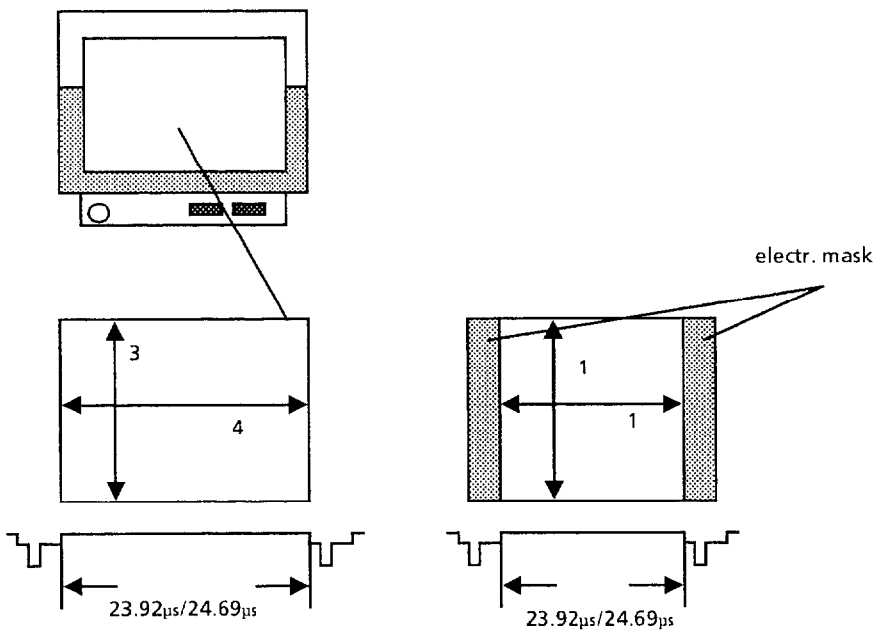
Smaller additional boards:

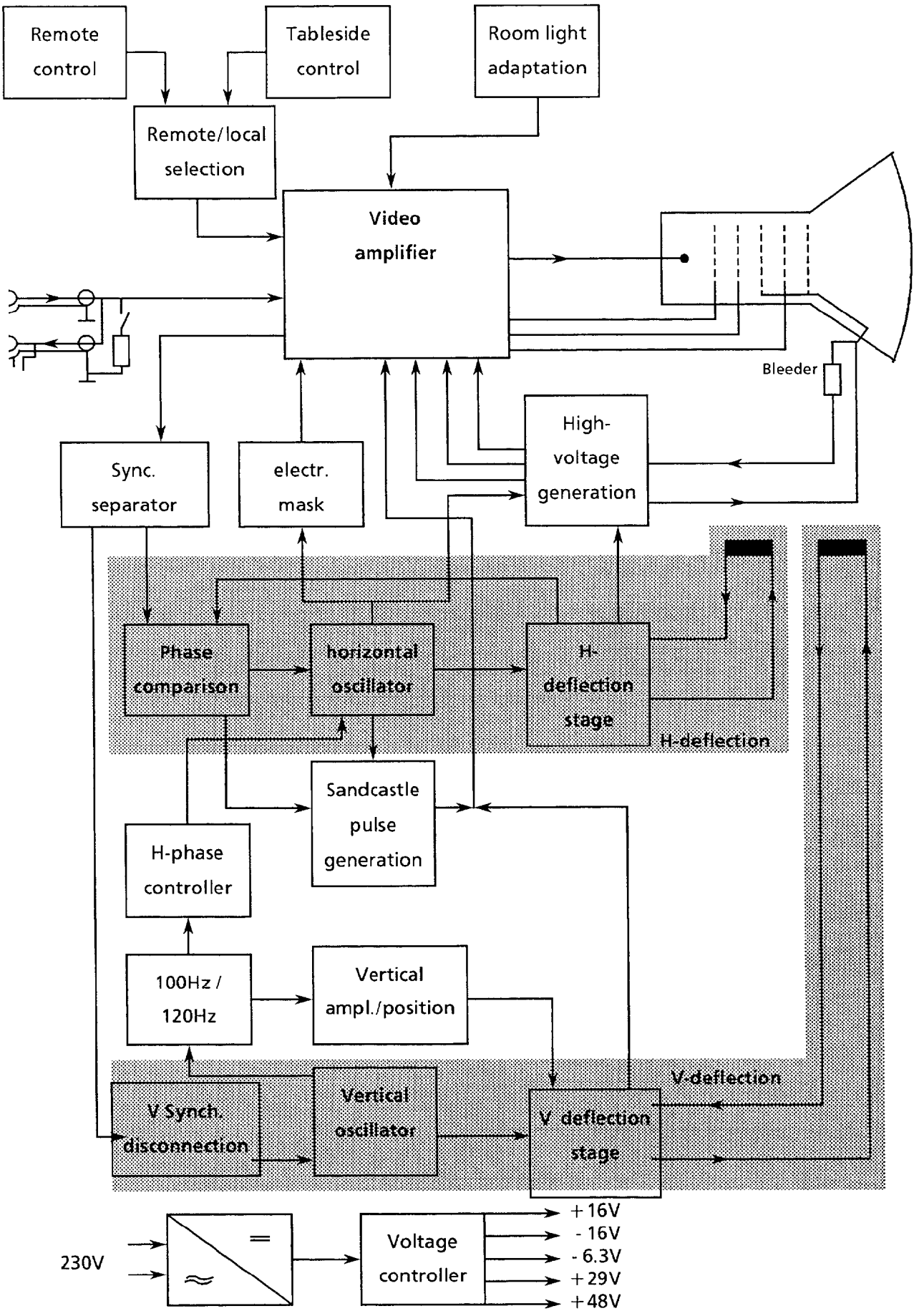
BP **Control board**
Potentiometer for brightness and contrast; jumper for adjustment voltages 6.5V , 3.5V , 9V , 3V ; LED display for power on

SP **Socket board**
picture tube connections

SE **Sensor board**
roomlight adaptation

Monitor	Timing:		
X 2079 *X 2092*	fieldfrequency:	50Hz 20ms	60Hz 16.66ms
	line frequency:	15.625KHz 64µs	15.75KHz 63.5µs
	lines per frame:	625	525
		3:4	3:4
X 2080	V-frequency:	100Hz 10ms	120Hz 8.33ms
	line frequency:	31.25KHz 32 µs	31.5KHz 31.746µs
	lines per frame:	625	525
		1:1	1:1



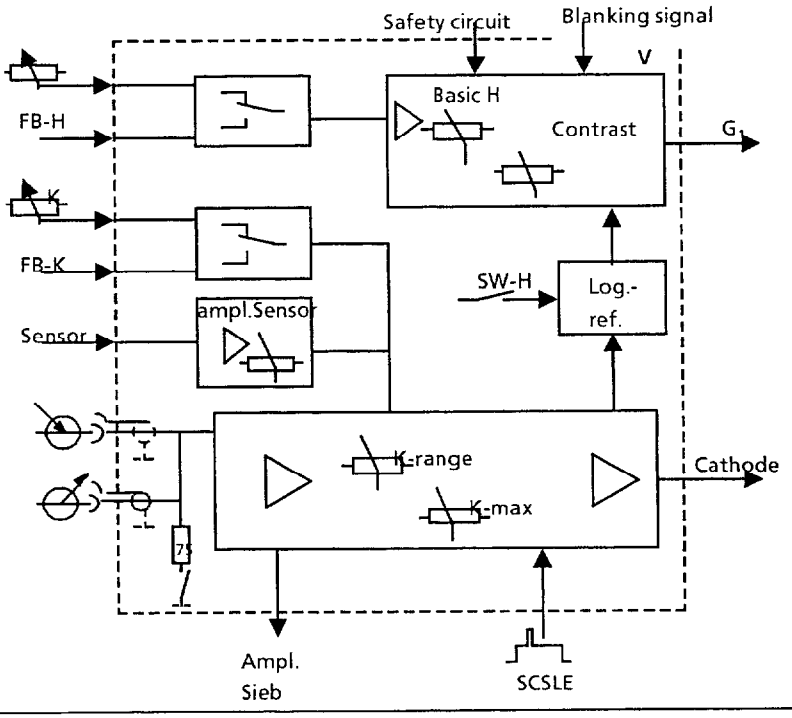

Remote control
Tableside control
Room light adaptation
Remote/local selection
Video amplifier
Bleeder
High-voltage generation
Sync. separator
electr. mask
Phase comparison
horizontal oscillator
H-deflection stage
H-deflection
Sandcastle pulse generation
H-phase controller
100Hz / 120Hz
Vertical ampl./position
V Synch. disconnection
Vertical oscillator
V deflection stage
V-deflection
230V
Voltage controller
+16V
- 16V
- 6.3V
+29V
+48V

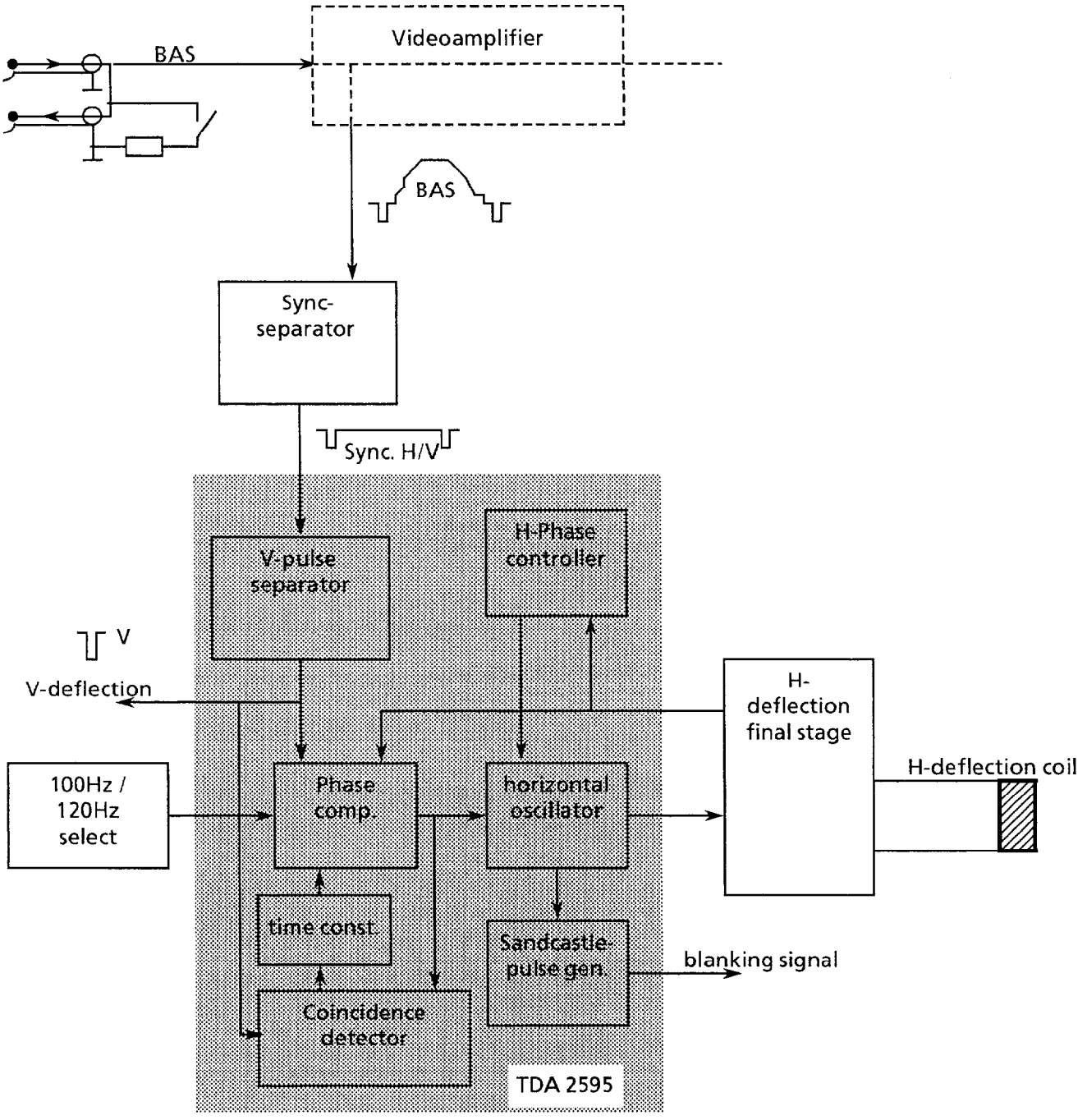
Videoamplifier

The following functions are implemented on the video amplifier board (VV1):

1. Amplification of the video signal to the cathode level required for the tube
2. Contrast control
3. Brightness control and room brightness adaptation
4. DC restoration (with/without)
5. Remote control interface selection

The input signal is conducted to the amplifier input via socket X143 BNC and relay K401. The second BNC socket X414 serves for looping the signal further. The end of the signal line can be terminated with 75ohms via switch S401 in the last monitor. S401 remains open for all other monitors. The video signal, AC-coupled, reaches a high-impedance FET input stage. The BAS signal for producing synchronization signals is decoupled behind this stage.
The BAS signal is amplified in the video amplifier and transmitted to the tube cathode via an output stage DC and/or AC-coupled (with/without DC restoration).
The gain of the video channel can be influenced with the contrast controller and/or via remote control interface and via the sensor built into the monitor.
A logical reference voltage is obtained from the controlled video signal. Using this voltage, the voltage G_1 and the brightness can also be adapted.




BAS
Videoamplifier
BAS
Sync-
separator
Sync. H/V
V-pulse
separator
H-Phase
controller
V
V-deflection
H-
deflection
final stage
H-deflection coil
100Hz /
120Hz
select
Phase
comp.
horizontal
oscillator
time const.
Sandcastle-
pulse gen.
blanking signal
Coincidence
detector
TDA 2595

Deflection board

Sync. separator

The BAS signal coming from the video amplifier is fed to a differential amplifier. This is connected only with the ground of the video amplifier. Malfunctions and/or ripple voltages arising on the supply cable between video amplifier and deflection plate are thus suppressed. In order to disconnect the synchronous signal from the BAS signal, the BAS signal is amplified, clamped and subsequently compared with a reference voltage (blade level) via a comparator. The H-deflection stage and/or the V-deflection are synchronized by this signal.

V-pulse disconnection

To obtain the V-synchronization pulse, the pulse mixture is integrated and led to a threshold value switch separating the V-sync. The V-sync. pulse resulting is used for triggering the V-final stage.

Synchronization

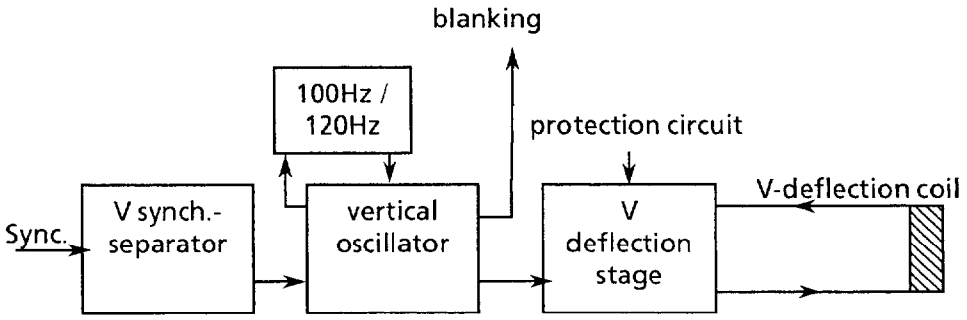
The control pulses for the V-deflection and the H-deflection are provided with the horizontal combination.
IC TDA 2595 contains the following functions:

- amplitude filter
- H-oscillator
- time constant switchover
- phase locked-loop control systems $\phi 1$ and $\phi 2$
- blanking and clamping pulse generation
- MUTE switching + phase modulator and horizontal output stage
- vertical synchronous signal output stage

Deflection board

V-deflection

The V-pulse is separated from the H + V synchronous mixture through integration and subsequent comparison with a threshold value. The V-oscillator is synchronized with this signal. The subsequent integrator which is reset in each case with the V-control pulse generates a sawtooth current generating the magnetic field in the V-deflection unit for vertical deflection of the beam. The V-deflection frequency is 100Hz at 50Hz or 120Hz at 60Hz line frequency. In this way, a flicker-free display of the image signal is achieved.
50Hz / 60Hz is like 100Hz / 120Hz automatically selected. (a correct adjustment is neccessary; adjustment instructions!)



Dynamic focusing

After repeated integration, an H-frequency parabolic voltage is generated from the line flyback pulses. The output voltage is amplified and decoupled in the output stage

Deflection board

Generation of the H-control pulses

In the 1st phase comparison stage, the H-oscillator and the disconnected H-synchronization pulses are compared with one another and synchronized according to frequency and phase. If the oscillator and the pulses are synchronous, this is detected by the coincidence detector and the 1st PLL is switched over to long time constant to reduce the influence of short-term faults. The short time constant is necessary to ensure fast capture of the oscillator. The no-load frequency of the H-oscillator should correspond as far as possible to the synchronous frequency so that the H-oscillator can be synchronized as fast as possible. The oscillator can be synchronized with the trigger frequency by short-circuiting the X252 pin strip (fo adjustment).

The 2nd phase control stage compares the output pulses of the H-output stage with the oscillator and generates a control voltage. This control voltage controls a phase shifter which determines the phase position of the H-drive pulse.

Horizontal output stage

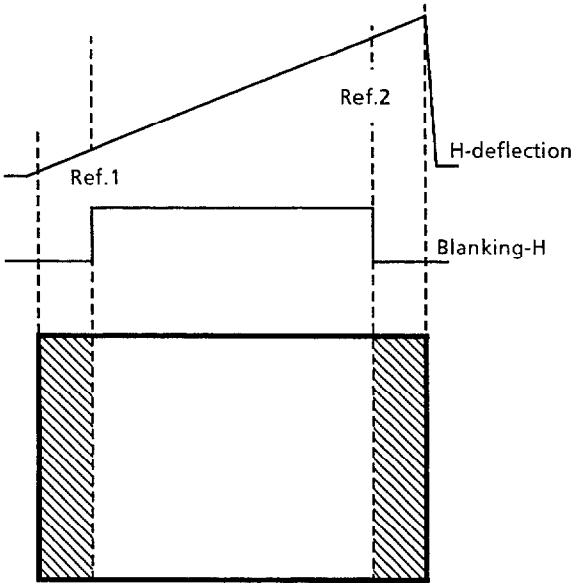
The switching transistor of the horizontal output stage is actuated via the TDA8143 driver. The H-output stage generates

the H-frequency sawtooth deflection current
high voltage supply of the picture tube
the voltage for static focusing and
the parabolic signal for dynamic focusing

The high voltage is generated in the T301 diode split transformer by transforming the line flyback pulses. For monitoring the high voltage, the high voltage actual value is reduced by a voltage divider (bleeder) and compared with a reference voltage. If the high voltage exceeds a specific value, H-control and therefore the H-final stage are blocked. For restart, the unit must be switched off and on.

Deflection board
Electrical mask

After impedance transformation the H-sawtooth pulse generated by the horizontal oscillator is transmitted to a comparator. A threshold value for rising ramp and a threshold value for falling ramp are adjusted with potentiometers (right/left mask width). After the threshold values are reached, the reset and/or set input of a flip flop is actuated. A widened H-blanking signal is generated by this.



Power supply

The supply voltages are generated with a primary controlled switched power supply. Control takes place by an IC TDA4919. The repetition frequency is 25KHz.
It is possible to select between a power supply input voltage of 115V or 230V by actuating switch S2.